WHAT IS CLAIMED IS:

1. An interpolation filter structure, comprising:

a first gain multiplexer for receiving a control signal, a previous discrete-time signal and a current discrete-time signal and selecting either the previous discrete-time signal or the current discrete-time signal according to the control signal to multiply by a first gain value and produce a first gain signal;

a second gain multiplexer for receiving the control signal, the previous discrete-time signal and the current discrete-time signal and selecting either the previous discrete-time signal or the current discrete-time signal according to the control signal to multiply by a second gain value and produce a second gain signal;

an adder for adding together the first gain signal and the second gain signal to produce an add signal; and

a multiplexer for receiving the control signal, the previous discrete-time signal and the add signal and selecting either the previous discrete-time signal or the add signal to serve as a discrete-time interpolation signal.

2. The interpolation filter structure of claim 1, wherein the first gain multiplexer further includes:

a first multiplexer for receiving the control signal, the previous discrete-time signal and the current discrete-time signal and selecting either the previous discrete-time signal or the current discrete-time signal according to the control signal to produce a first multiplexer signal; and

a first gain unit for multiplying the first multiplexer signal by the first gain value to produce the first gain signal.

3. The interpolation filter structure of claim 2, wherein the first gain unit provides a first gain value of about 0.75.

4. The interpolation filter structure of claim 1, wherein the second gain multiplexer further includes:

5   a second multiplexer for receiving the control signal, the previous discrete-time signal and the current discrete-time signal and selecting either the previous discrete-time signal or the current discrete-time signal according to the control signal to produce a second multiplexer signal; and

a first gain unit for multiplying the second multiplexer signal by the 10   second gain value to produce the second gain signal.

5. The interpolation filter structure of claim 4, wherein the second gain unit provides a second gain value of about 0.25.